

Application No. 10/733,089  
Responsive to the Office Action of June 7, 2006

page 3  
September 7, 2006

**REMARKS**

The status of the claims is as follows:

- a. **Claims 1 -10 and 13 are Pending** in the present application.
- b. **Claims 1 -10 and 13 are rejected.**

Application No. 10/733,089  
Responsive to the Office Action of June 7, 2006

page 4  
September 7, 2006

ii. **ARGUMENT**

a. **Objections to the Drawings**

In the Office Action, the Examiner objected to the drawings because they include the following reference character(s) not mentioned in the description: 670 and 680. Applicant asserts that the detailed description has been amended accordingly to describe these reference characters. Therefore the objections to Figure 6 ought to now be withdrawn.

b. **Rejections of Claims 1-6, 8, and 9 under 35 U.S.C. §102(e) (146 Reference)**

For ease of review, Applicant reproduces independent claims 1, 17 and 19 herein below:

1. A magnetic random access memory device comprising:  
plurality of magnetic memory elements;  
a sense line coupled to the plurality of magnetic memory elements for sensing a magnetic orientation of at least one of the plurality of magnetic memory elements wherein the sense line includes a first via and a second via; and  
wherein the sense line is utilized to thermally assist in switching a magnetic orientation of at least one of the plurality of magnetic memory elements.

Applicant respectfully disagrees with the Examiner's assessment. The present invention of claim 1 recites a magnetic random access memory device. Accordingly, a sense line is utilized to thermally assist in the switching of the magnetic orientation of magnetic memory elements within the MRAM device. By utilizing the sense line to thermally assist in the switching of the magnetic orientation of magnetic memory

Application No. 10/733,089  
Responsive to the Office Action of June 7, 2006

page 5  
September 7, 2006

elements within the MRAM device, the write current needed to perform the write operations of the MRAM device is substantially reduced.

The Examiner states that the *Nickel et al.* reference anticipates the present invention. Applicant respectfully disagrees and asserts that the *Nickel et al.* reference does not disclose "...a sense line coupled to the plurality of magnetic memory elements for sensing a magnetic orientation of at least one of the plurality of magnetic memory elements wherein the sense line includes a first via and a second via..." as recited in claim 1 of the present invention. (Emphasis added.) *Nickel et al.* discloses a thin film device and a method of providing thermal assistance therein. Accordingly, a heater material is utilized to thermally assist in the operation of the thin film device. The thin film device includes at least one patterned thin film layer, a heater material coupled to the at least one patterned thin film layer for providing thermal assistance to the at least one of the patterned thin film layers and a conductor coupled to the heater material for supplying energy to the heater material.

The Examiner asserts that *Nickel et al.* discloses first and second vias as parts 630 in Figure 6. (See Attached Exhibit A.) Applicant respectfully disagrees. Figure 6 of *Nickel et al.* shows top conductors 610, sense lines 620 and SDT junctions 630. The conductive sidewall material 640 is a material capable of absorbing energy from a power source and is coupled to the decoder 650 whereby the decoder 650 is coupled to the power source 660. In an embodiment the decoder 650 applies energy from the power source 660 to the conductive sidewall material 640 in a selective fashion.

Essentially, the Examiner is equating the SDT (spin dependent tunnel) junctions 630 of the *Nickel et al.* reference with the first and second vias recited in claim 1 of the present invention. Applicant asserts that Examiner is clearly mistaken in this line of reasoning. The SDT junctions in the *Nickel et al.*

Application No. 10/733,089  
Responsive to the Office Action of June 7, 2006

page 6  
September 7, 2006

reference are magnetic memory elements of an MRAM device that have a resistance that is dependent upon the state of their magnetic film. A via is a conducting pathway between two or more substrate layers.

Applicant asserts that a magnetic memory element of an MRAM device that has a resistance that is dependent upon the state of its magnetic film is clearly different from a conducting pathway between two or more substrate layers. Consequently, *Nickel et al.* does not disclose "...wherein the sense line includes a first via and a second via ..." as recited in claim 1 of the present invention. Since the *Nickel et al.* reference does not disclose "...wherein the sense line includes a first via and a second via ..." as recited in claim 1 of the present invention, claim 1 of the present invention is allowable over the *Nickel et al.* reference.

**Claims 2-6, 8 and 9** depend from independent **Claim 1** and inherit all of its limitations. Therefore, **Claims 2-6, 8 and 9** are also patentably distinct in view of the Examiner's reference and the rejections of **Claims 2-6, 8 and 9** under 35 U.S.C. §102(e) ought to now be withdrawn.

c. **Rejections of Claims 1-8, 10 and 13 under 35 U.S.C. §102(e) (673 Reference)**

Applicant respectfully disagrees with the Examiner's assessment. The Examiner states that the *Daughton et al.* reference anticipates the present invention. Applicant respectfully disagrees and asserts that the *Daughton et al.* reference does not disclose "...a sense line coupled to the plurality of magnetic memory elements for sensing a magnetic orientation of at least one of the plurality of magnetic memory elements wherein the sense line includes a first via and a second via..." as recited in claim 1

Application No. 10/733,089  
Responsive to the Office Action of June 7, 2006

page 7  
September 7, 2006

of the present invention. (Emphasis added.) *Daughton et al.* discloses a ferromagnetic thin-film based digital memory having a bit structures therein a magnetic material film in which a magnetic property thereof is maintained below a critical temperature above which such magnetic property is not maintained, and may also have a plurality of word line structures each with heating sections located across from the magnetic material film in a corresponding one of the bit structures.

These bit structures are sufficiently thermally isolated to allow selected currents in the adjacent word lines or in the bit structure, or both, to selectively heat the bit structure to approach the critical temperature. Such bit structures may have three magnetic material layers each with its own critical temperature for maintaining versus not maintaining a magnetic property thereof.

The Examiner asserts that *Daughton et al.* discloses first and second vias as parts 20' in Figure 11A. (See Attached Exhibit B.) Applicant respectfully disagrees.

Figure 11A of *Daughton et al.* is described in paragraph 79 which reads:

Memory cells 10 are shown in FIG. 11A interconnected by sense line interconnections, 20, in parallel series strings so that each such string forms a sense line, 20', extending from left to right in the figure (or vice versa). Interconnections 20 and cells 10 in these strings 20' are provided on an electrically insulating material layer, 21, to be separated by portions of that layer from, and positioned over, a set of word lines, 22, shown in dashed line form, that extend parallel to one another and perpendicular to the sense lines so that each of these word lines passes under a corresponding sequential set of cells 10 such that each cell in the set is in a different string. (Emphasis added.)

Essentially, the Examiner is equating the sense line 20' of the *Daughton et al.* reference with the first and second vias recited in claim 1 of the present invention. Applicant asserts that Examiner is mistaken in this thought process. The first and second vias of the recited invention of claim 1 are elements of the sense line, not the sense line itself. Element 20' of the *Daughton et al.* reference is a sense line, not a via that is included in a sense line.

Application No. 10/733,089  
Responsive to the Office Action of June 7, 2006

page 8  
September 7, 2006

Applicant asserts that a sense line is clearly different from a via that is an element of a sense line. Consequently, *Daughton et al.* does not disclose "...wherein the sense line includes a first via and a second via ..." as recited in claim 1 of the present invention. Since the *Daughton et al.* reference does not disclose "...wherein the sense line includes a first via and a second via ..." as recited in claim 1 of the present invention, claim 1 of the present invention is allowable over the *Daughton et al.* reference.

Claims 2-8, 10 and 13 depend from independent Claim 1 and inherit all of its limitations. Therefore, Claims 2-8, 10 and 13 are also patentably distinct in view of the Examiner's reference and the rejections of Claims 2-8, 10 and 13 under 35 U.S.C. §102(e) ought to now be withdrawn.

iii. CONCLUSION

Applicant believes that this application is in condition for allowance. Accordingly, Applicant respectfully requests reconsideration, allowance and passage to issue of the claims as now presented. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

Respectfully submitted,

  
Wendell J. Jones

Reg. No. 45,961